INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior

National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)
Exp. Date (11/30/2010)
Form No. (10-226)

Reporting Year:	**Park:**	**Select the type of permit this report addresses:**
2010	Shenandoah NP	Scientific Study

Name of principal investigator or responsible official:	**Office Phone:**
Ami Riscassi	434-982-2616

Mailing address:	**Office FAX**
University of Virginia Clark Hall 291 McCormick Road Charlottesville, VA 22904 USA	434-924-4761 **Office Email** alr8m@virginia.edu

Additional investigators or key field assistants (first name, last name, office phone, office email)

Name: Kelly Hokanson	**Phone:** (757) 374-2702	**Email:** kjh5r@virginia.edu
Name: Todd Scanlon	**Phone:** (434) 924-3382	**Email:** tms2v@virginia.edu
Name: Amber Converse	**Phone:** (434) 982-2616	**Email:** adc9x@virginia.edu

Project Title (maximum 300 characters):

Controls on mercury dynamics during storm events within mid-Appalachian forested headwater catchments: interactions with organic carbon

Park-assigned Study or Activity #:	**Park-assigned Permit #:**	**Permit Start Date:**	**Permit Expiration Date:**
SHEN-00359	SHEN-2008-SCI-0021	Nov 05, 2008	Sep 30, 2010

Scientific Study Starting Date:	**Estimated Scientific Study Ending Date:**
Nov 05, 2008	Jun 30, 2011

For either a Scientific Study or a Science Education Activity, the status is:	**For a Scientific Study that is completed, please check each of the following that applies:**
Continuing	__ A final report has been provided to the park or will be provided to the park within the next two years __ Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park __ All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed

Activity Type:

Research

Subject/Discipline:

Water Quality

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

This proposed research will investigate the physical and chemical controls on mercury (Hg) transport within catchments in Shenandoah National Park. A majority of Hg is transported downstream during high-flow events, and its mobility and toxicity have been shown to be coupled with organic carbon (OC). Understanding factors regulating Hg transport and interactions with OC is essential to assess the downstream fate of Hg and address concerns about current and future contamination. The main objectives of the project are: (1) to quantify particulate and dissolved Hg and OC fluxes in stream water during storm-events and investigate Hg-OC

dynamics, and (2) to quantify particulate and dissolved Hg and OC fluxes in stream water during baseflow and investigate Hg-OC dynamics. The ultimate goal is to further the understanding of Hg dynamics within the greater scientific community, as well as to provide important information about Hg controls in this region. SHEN resource management officials may use our findings to determining the most effective Hg sampling protocol as well as to determine the relevant concerns to downstream waters.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

From January through October 2010, water samples were collected manually and with automated samplers at Paine Run, Staunton River, and Piney River for analysis of particulate mercury, dissolved mercury, dissolved organic carbon, UV absorbance (proxy for organic matter quality), and pH.

In 2010 a paper was published

Riscassi, A.L., Converse, A.D., Hokanson, K.J. and T.M. Scanlon, (2010) Evaluation of an automated sampling technique to measure total mercury in streamwater during storm events, Journal of Environmental Monitoring.

In 2010 a paper was accepted and will be published in 2011

Riscassi, A.L., Hokanson, K.J. and T.M. Scanlon, (in press) Streamwater particulate mercury and suspended sediment dynamics in a forested headwater catchment. Water, Air, and Soil Pollution.

Analysis of remaining data is ongoing and should be completed by July 2011.

All automated samplers and tubing will be removed from each of the three field sites by Spring 2011.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):	**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**
$0	$5000

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year: